

CLAIMS

1. A yoke which is formed by molding a soft magnetic iron powder and which is used for an electromagnetic actuator, wherein a discontinuous portion for preventing occurrence of eddy current loss is provided.

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2. The yoke according to claim 1, wherein the discontinuous portion has one or a plurality of notches extended axially from one end surface toward another end surface thereof.

3. The yoke according to claim 2, wherein the discontinuous portion has one or a plurality of notches extended axially from said another end surface to said one end surface.

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4. The yoke according to claim 1, wherein the discontinuous portion has one or a plurality of grooves extended axially on an outer side surface and (or) an inner side surface of the yoke.

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5. The yoke according to claim 1, wherein the yoke is divided circumferentially into a plurality of blocks, the adjacent blocks are connected together with an insulating material sandwiched therebetween, and the connection portion where the insulating material is sandwiched serves as the discontinuous portion.

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6. The yoke according to any of claims 1 to 5, wherein the yoke is divided axially into a plurality of divisions.

7. An electromagnetic actuator comprising: an outer yoke; an inner yoke that is formed by molding a soft magnetic iron powder and that is so arranged as to face an inside of the outer yoke; a coil portion that is provided at the outer yoke; a permanent magnet that reciprocates in accordance with a magnetic flux generated by the coil portion arranged between the outer yoke and the inner yoke; and a reciprocator that supports the permanent magnet,

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wherein the yoke according to any one of claims 1 to 5 is adopted as the outer yoke and (or) the inner yoke.

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8. An electromagnetic actuator comprising: an outer yoke; an inner yoke that is formed by molding a soft magnetic iron powder and that is so arranged as to face an inside of the outer yoke; a coil portion that is provided at the outer yoke; a permanent magnet that reciprocates in accordance with a magnetic flux generated by the coil portion arranged
5 between the outer yoke and the inner yoke; and a reciprocator that supports the permanent magnet,

wherein the yoke according to claim 6 is adopted as the outer yoke and (or) the inner yoke.

10 9. A Stirling engine comprising: the electromagnetic linear actuator according to claim 7; a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.

10. A Stirling engine comprising: the electromagnetic linear actuator according to claim 8;
15 a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.